

37 AMENDMENTS TO THE CLAIMS

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39 This listing of claims will replace all prior versions, and listings, of claims
40 in the application:

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42 Listing of Claims:

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44 **Please cancel claims 1-12.**

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1 13. (Currently amended) A method for managing object to relational one-
2 to-many mapping for an object model mapped to a relational database, the method
3 comprising steps of:

4 obtaining, when a source object having a primary key value is being read
5 from a source table in the relational database, mapping meta-data including
6 information of one or more corresponding target tables and information of one or
7 more foreign keys of the corresponding target tables;

8 generating a ~~select~~SELECT instruction-statement to select from the target
9 tables target objects with which the source object has one-to-many relationships of
10 privately owned type, based on the mapping meta-data and the primary key value
11 of the source object; and

12 reading the target objects and relationships relating to the source object
13 from the database by executing the ~~select~~SELECT instruction-statement on the
14 database, wherein the SELECT statement includes a SELECT clause and a
15 WHERE clause, wherein the SELECT clause does not include a foreign key field,
16 containing a key value for the source object, from each corresponding target table,
17 the SELECT clause contains only other fields in each corresponding target table
18 whose data make up the target object data, and wherein the SELECT statement
19 checks the foreign key fields in the WHERE clause to determine a matching key

20 value for the source object, thereby avoiding storing back references to the source
21 object in the target objects by storing key values for the source object in the
22 foreign key fields which are not returned by the SELECT statement wherein the at
23 least one target object is manipulated by using the foreign key together with the
24 target object data, thereby avoiding back references in the target objects.

1 14. (Presently Amended) The method as claimed in claim 13, wherein the
2 reading step comprises steps of:
3 querying for rows in the target tables that have a foreign key value
4 matching the primary key value of the source object by executing the
5 select~~SELECT~~ instruction statement on the database;
6 translating the queried rows into target objects based on the mapping
7 meta-data;
8 adding the target objects to a collection that represents a value of
9 relationship of the source object, the value of relationship referencing to the target
10 objects; and
11 setting the value of the relationship into the source object.

1 15. (Presently Amended) The method as claimed in claim 13, wherein the
2 generating step comprises a step of generating a select~~SELECT~~ instruction
3 statement to check foreign key fields in the target tables.

1 16. (Original) The method as claimed in claim 13, wherein the statement
2 generating step generates the read instructions as SQL Select statements.

1 17. (Original) The method as claimed in claim 16 further comprising a
2 step of:
3 storing the mapping meta-data external to the source object class and the
4 target object classes.

1 18. (Original) The method as claimed in claim 17, wherein the storing step
2 stores the mapping meta-data as XML files.

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2 **Please cancel claims 19-46.**

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1 47. (New) A computer-readable storage medium storing instructions that
2 when executed by a computer cause the computer to perform a method for
3 managing object to relational one-to-many mapping for an object model mapped
4 to a relational database, the method comprising steps of:

5 obtaining, when a source object having a primary key value is being read
6 from a source table in the relational database, mapping meta-data including
7 information of one or more corresponding target tables and information of one or
8 more foreign keys of the corresponding target tables;

9 generating a SELECT statement to select from the target tables target
10 objects with which the source object has one-to-many relationships of privately
11 owned type, based on the mapping meta-data and the primary key value of the
12 source object; and

13 reading the target objects and relationships relating to the source object
14 from the database by executing the SELECT statement on the database, wherein
15 the SELECT statement includes a SELECT clause and a WHERE clause, wherein
16 the SELECT clause does not include a foreign key field, containing a key value
17 for the source object, from each corresponding target table, the SELECT clause
18 contains only other fields in each corresponding target table whose data make up
19 the target object data, and wherein the SELECT statement checks the foreign key
20 fields in the WHERE clause to determine a matching key value for the source
21 object, thereby avoiding storing back references to the source object in the target
22 objects by storing key values for the source object in the foreign key fields which
23 are not returned by the SELECT statement.

1 48. (New) The computer-readable storage medium as claimed in claim 47,
2 wherein the reading step comprises steps of:
3 querying for rows in the target tables that have a foreign key value
4 matching the primary key value of the source object by executing the SELECT
5 statement on the database;
6 translating the queried rows into target objects based on the mapping
7 meta-data;
8 adding the target objects to a collection that represents a value of
9 relationship of the source object, the value of relationship referencing to the target
10 objects; and
11 setting the value of the relationship into the source object.

1 49. (New) The computer-readable storage medium as claimed in claim 47,
2 wherein the generating step comprises a step of generating a SELECT statement
3 to check foreign key fields in the target tables.

1 50. (New) The computer-readable storage medium as claimed in claim 47,
2 wherein the statement generating step generates the read instructions as SQL
3 SELECT statements.

1 51. (New) The computer-readable storage medium as claimed in claim 50,
2 further comprising a step of:
3 storing the mapping meta-data external to the source object class and the
4 target object classes.

1 52. (New) The computer-readable storage medium as claimed in claim 51,
2 wherein the storing step stores the mapping meta-data as XML files.